Chapter 4 – Hazardous Waste Management (REDACTED)

4.1. Applicability

This instruction is applicable to all civil servant and contractor employees, NASA Research Park Partners, and tenant personnel at Ames Research Center (Ames), Moffett Federal Airfield (MFA), and Crows Landing Flight Facility (Crows Landing).

4.2. Purpose

This chapter prescribes the roles and responsibilities for proper management of hazardous waste generated at Ames, and Crows Landing.

4.3. Policy

It is the policy of the Ames Research Center to manage hazardous waste in a manner which protects human health and the environment in accordance with all applicable laws and regulations.

4.4. Authority

All relevant federal, state and local laws and regulations related to hazardous waste management including, but not limited to:

- Resource Conservation and Recovery Act (RCRA) of 1976, as amended (42 U.S. C. 6901 et seq.)
- Public Law No 102-386: Federal Facilities Compliance Act (FFCA) of 1992
- 40 Code of Federal Regulations (CFR) Parts 260-270, Solid and Hazardous Wastes
- 49 CFR, Parts 100-177, Hazardous Materials Transportation
- 40 CFR, Part 61, Subpart M (Asbestos-NESHAPs)
- 40 CFR, Part 761, Polychorinated biphenyls
- California Code of Regulations (CCR), Title 22, Parts 66260-66270, Regulation of Hazardous Waste
- California Health and Safety Code, sections 25100 to 25250, California Hazardous Waste Control Law

4.5. Responsibilities

4.5.1 Generators of Hazardous Waste

a. Manage hazardous materials and hazardous wastes in accordance with Section

4.7, of this chapter General Management Requirements, and in compliance with applicable environmental laws and regulations and NASA policy.

b. Label all containers and accumulation areas with appropriate labels and signs to comply with hazardous waste accumulation standards including satellite and 90-day waste accumulation requirements.

c. Accurately complete Form A, Chemical Material/Waste Pick-up and Container Delivery Request, included as Appendix A, and forward to the Environmental Services Office, Code QE, (Environmental Office) or designee prior to required pick-up or delivery date.

d. Properly manage hazardous waste in compliance with the "Cradle-to-Grave" rules; use correct containers compatible with the waste and segregate by hazard classes.

e. Contact the Environmental Office prior to treating waste on-site. Unpermitted treatment of any hazardous waste is illegal. Obtaining a state-issued permit for hazardous waste treatment must be done by the Environmental Office.

f. Prevent the disposal of hazardous waste into the sanitary sewer. Pouring hazardous waste down the sink is prohibited by law. This prohibition also applies to disposal of first rinseate from empty hazardous waste or hazardous materials containers. Such rinseates shall be collected and managed as hazardous waste.

g. Implement waste minimization requirements.

h. Notify the Environmental Office or designated contractor of the location of hazardous waste accumulation areas.

i. Notify the Environmental Office or designated contractor of new hazardous waste streams or changes in existing hazardous waste streams or processes generating the waste.

j. Immediately notify the Environmental Office or designated contractor whenever hazardous materials or hazardous wastes are spilled outside of secondary containment or are released into the environment.

k. Read and be familiar with the facility Building Emergency Action Plan (BEAP). Please refer to Chapter 15, Emergency Response, for more information.

l. Know the location of spill control equipment and supplies (e.g. absorbent) and be familiar with hazard classes of materials stored in each area for which they are responsible. Generators must know potential spill routes in hazardous waste accumulation areas including location of drainage ditches, storm drains and sanitary sewer drains.

m. Attempt to contain spilled or leaking materials if the action will not endanger employee health and safety. If deemed safe, the generator shall secure container or source of spill (i.e., upright container, plug container, dike around container/spill, dike off floor or storm drains and/or any other routes to the environment, and cordon off the area). Note: All generators of hazardous waste are required to have 16 hours of hazardous materials training, which includes chemical spill response. Personnel must be trained before cleaning up a spill. See Chapter 7 for Environmental Training requirements.

n. Call Ames Security Dispatch Office (dial 9-1-1 from and Ames phone, or **REDACTED** if help is required to contain spill or if spill occurs during off-hours.

o. Call the Environmental Office to report spills that are under control and occur during normal working hours.

p. Record spill event details in generator spill log and maintain the log for 3 years.

q. Ensure that hazardous waste accumulation areas are accessible for inspection by the Environmental Office and regulatory agencies.

r. Ensure hazardous waste manifests are signed by an authorized representative of Code QE.

s. Inspect hazardous waste generation areas weekly and fill out the Inspection Form (Appendix F). Maintain inspection records for three years.

4.5.2 Environmental Services Office, Code QE

1. Sign all manifests required for off-site transportation and disposal of hazardous wastes.
2. Provide hazardous waste management guidance to generators.
3. Provide containers and labels to generators upon request.
4. Sample and analyze hazardous waste as required. Use analytical results and other information to profile waste streams generated.
5. Prepare and maintain copies of manifests, Biennial reports, exception reports, and hazardous waste characterization records.
6. Comply with Land Disposal Restriction (LDR) requirements.
7. Coordinate on-site pick-up of hazardous waste.
8. Arrange off-site transportation, treatment, recycling and/or disposal of routinely generated hazardous wastes.
9. Manage buildings **REDACTED** hazardous waste accumulation areas as required by environmental regulations and NASA policy.
10. Manage Ames Chemical Exchange (ACE) located at **REDACTED** as required by environmental regulations and NASA policy.
11. Serve as technical point-of-contact for all regulatory agency interface and correspondence, including inspections.
12. Prepare/maintain site and location-specific contingency plans and make necessary arrangements with local authorities to respond to emergencies.
13. Amend contingency plans whenever:
    - Applicable regulations are revised or changed.
    - Plan fails in an emergency.
    - Facility changes in ways which would affect hazards and/or response.
    - Changes occur in the list of site emergency coordinators.
    - Changes occur in the list of site emergency equipment.
14. Designate site chemical spill response emergency coordinators as needed.
15. Provide hazardous waste management training to generators as required.

16. Audit generators for compliance with hazardous waste management requirements, including the training requirement.

17. Inspect satellite accumulation areas and 90-day accumulation areas to ensure compliance.

18. Designate satellite accumulation areas.

4.6. Definitions

4.6.1 Accumulation Start Date

The regulations define "accumulation start date" as one of the following:

a. The date that any amount of HAZARDOUS WASTE is first place in a new container.

b. The date a HAZARDOUS MATERIALS container is emptied (check the Empty Container Decision Tree, located in Appendix B, to determine if it needs to be managed as hazardous waste).

c. The date surplus chemicals in their original containers are no longer needed by anyone at Ames.

4.6.2 Acutely Hazardous Waste

Acutely hazardous waste is hazardous waste defined by U.S. Environmental Protection Agency (EPA) in 40 CFR 261.33(e) as EPA's "P-listed" hazardous waste (included in Appendix C). These wastes typically are toxic or reactive. Acutely hazardous waste is a federal definition, whereas extremely hazardous waste (see definition below) is a State of California definition.

4.6.3 Characteristics of Hazardous Waste

The properties defined in the regulations for toxicity, ignitability, corrosivity and reactivity. These characteristics are defined in sections 4.6.7, 4.6.17, 4.6.21 and 4.6.27 below, and are also included in 40 CFR Part 260 and in 22 CCR 66261.

4.6.4 Compatibility

The chemical characteristics of materials which determine whether certain materials can be safety mixed together. Compatibility may or may not exist between chemicals, and between chemicals and containers.

4.6.5 Container

Any portable device in which a material is stored, handled, treated, transported, recycled or disposed of, e.g., steel and plastic drums. Suitable drums for hazardous waste transportation must meet Department of Transportation (DOT) standards.

4.6.6 Container Compatibility

A container is compatible with the hazardous waste it contains if it is constructed of innocuous, stable materials which do not react with the waste, e.g., polypropylene drum and mineral acid.

4.6.7 Corrosivity

The characteristic of a waste that renders the waste hazardous by any of the following criteria:

1. It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, or is capable of corroding steel (SAE 1020) at a rate > 6.35 mm (0.25 inch) per year at 55oC (130o F). Many strong acids and bases fall in this category e.g. sulfuric acid and sodium hydroxide (caustic soda).

2. It can cause destruction of living tissue or steel surfaces by chemical action according to 22 CCR 66261.22(a)(4).

3. It is a non-aqueous or non-liquid waste which, when mixed with an equal weight of water, yields a liquid which has a pH of less than or equal to 2 or greater than or equal to 12.5. (If mixing non-liquid or non-aqueous wastes with an equal amount of water does not generate sufficient liquid for pH testing, the California Department of Toxic Substances Control (DTSC) recommends that water be added at a 2:1 ratio of water to sample to obtain an accurate pH measurement.)

4. Examples of wastes which exhibit the corrosivity characteristic are:

Acids	2-(2-Aminoethoxy)ethanol
Battery fluid, acid or alkali	Benzyldimethylamine
Butyric acid	Calcium oxide (Lime)
Caproic acid	Caustic soda
Crotonic acid	Di-n-butylamine
Ethanolamine	Ethylenediamine
Formic acid	Hydrochloric acid
Phosphoric acid	Proprionic acid
Sodium hydroxide solution	Sulfuric acid

4.6.8 Empty Container

A container, or an inner liner removed from a container, which previously held a hazardous material including hazardous waste [hazardous waste includes characteristic wastes and listed wastes and any material listed as an acute hazardous waste in 40 CFR 261.31-33 or a waste which is extremely hazardous pursuant to 22 CCR 66261.110-113], is empty:

a. If the hazardous material which the container or inner liner held is pourable, no hazardous material can be poured or drained from the container or inner liner when the container or inner liner is held in any orientation (e.g., tilted, inverted, etc.).

b. If the hazardous material which the container or inner liner held is not pourable, no hazardous material remains in, or on the container or inner liner that can feasibly be removed by physical methods (excluding rinsing) which comply with applicable air pollution control laws and which are commonly employed to remove materials from that container or inner liner. Following material removal, no adhered or crusted material resulting from a buildup of successive layers or mass of solidified material shall remain on the top, bottom and sidewalls of the container.

Note: Any container which previously held an acutely hazardous waste or an extremely hazardous waste must be triple-rinsed before it meets the requirements of empty as defined above. In addition, the rinseate must be collected and managed as hazardous waste.

4.6.9 Empty Container Label

Label attached to recyclable empty containers (see Appendix D).

4.6.10 Extremely Hazardous Wastes

Extremely hazardous waste is defined in 22 CCR 66260.10 as any hazardous waste or mixture of hazardous wastes that, if human exposure should occur, may likely result in death, disabling personal injury, or serious illness because of its quantity, concentration, or chemical characteristics. The criteria for designating extremely hazardous wastes are given in 22 CCR 66261.110. These criteria include:

1. A waste or material with an acute oral LD50 less than or equal to 50 mg/kg;
2. An acute inhalation LC50 less than or equal to 100 parts per million as a gas or vapor;
3. Contains any of the substances listed in 22 CCR 66261.24 (a)(7) at a single or combined concentration equal to or exceeding 0.1 percent by weight (see Table IV, Appendix G);
4. Has been shown through experience or testing that human exposure to the waste may result in death, disabling personal injury or serious illness, because of its carcinogenicity, high acute or chronic toxicity, bioaccumulative properties, or persistence in the environment;
5. Is water reactive;
6. Any waste listed in 22 CCR 66261.113 at a concentration exceeding its listed total threshold concentration (Table V, see Appendix G);
7. Any waste listed as extremely hazardous in 22 CCR 66261.126, Appendix X (see Appendix C of this chapter).

4.6.11 Free Liquids

Liquids which readily separate from the solid portion of the waste under ambient temperature or pressure (40 CFR 260.10). Waste which has free liquids is classified as a liquid waste.

4.6.12 Generator or Producer

Any person at Ames, MFA or Crows Landing whose act, process or equipment produces hazardous waste.

4.6.13 Halogenated Solvents

Solvents containing halogens (fluorine, chlorine, bromine, iodine) such as trichloromethane (chloroform) or 1,1,1-trichlorofluoroethane (Freon-113).

4.6.14 Hazardous Material

As defined in Section 25501 of Chapter 6.95 of the California Health and Safety Code, any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler has a reasonable basis for believing it would be injurious to the health and safety of persons or harmful to the environment.

4.6.15 Hazardous Waste

A waste, which because of its quantity, concentration, or physical, chemical or infectious characteristics, or regulatory listing may cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

4.6.16 Hazardous Waste Accumulation Label

Hazardous waste accumulation labels are to be used by generators in labeling containers. The label(s) must be completed and affixed onto container(s) at all times (see Appendix E). The label(s) must be placed on container(s) as soon as hazardous waste is first placed in a container, or in the case of an off-specification or unwanted hazardous materials container, when the material inside the container is deemed a hazardous waste.

4.6.17 Ignitability

The characteristic of a waste that renders the waste hazardous by any of the following criteria:

a. It is a liquid (other than aqueous solutions with less than 24% alcohol) that has a flashpoint of < 60^{o}C (140^{o}F).

b. It is a non-liquid capable of causing fire through friction, absorption of moisture, or spontaneous chemical changes, and when ignited burns vigorously and persistently.

c. It is any oxidizer as defined in 49 CFR 172.151.

d. It is any flammable compressed gas as defined in 49 CFR 173.300.

e. Examples of wastes which exhibit the ignitability characteristic are:

Acetone	Cyclopentanol
Denatured alcohol	Diesel fuel
Ethyl acetate	Ethyl ether
Furfural	Heptane
JP-8 jet fuel	Methyl propionate
Paint thinner	Piperidine
Xylene	Calcium chlorite

Hydrogen peroxide	Potassium permanganate
Acetylene	Butane
Hydrogen	Propane
Aluminum powder	Metal hydrides
Paraformaldehyde, solid	

4.6.18 Inspection Form

A form completed weekly by generator to document inspection of hazardous waste accumulation areas (see Appendix F).

4.6.19 Listed Hazardous Waste

A hazardous waste that appears as a listed waste in federal regulations (F, K, P and U lists; Subpart D - Lists of Hazardous Wastes at 40 CFR 261.30 through 33). A waste may also be hazardous because of its characteristics, even if it is not listed (Subpart C - Characteristics of Hazardous Waste at 40 CFR 261.20 through 24; 22 CCR 66261.20 though 24). Federal wastes and state wastes exhibiting the toxicity characteristic are included in Appendix G.

4.6.20 Oxidizer

A material that promotes combustion of other materials.

4.6.21 Reactivity

The characteristic of a waste that renders the waste hazardous by any of the following criteria:

1. It is normally unstable and readily undergoes violent change without detonation.
2. It reacts violently with water, forms potentially explosives mixtures with water, or generates toxic gases, vapors or fumes when mixed with water.
3. It is capable of detonation or explosion if subjected to an initiator or heat.
4. It contains cyanides or sulfides which can generate toxic gases when exposed to pH conditions between 2.0 and 12.5.
5. Examples of wastes which exhibit the reactivity characteristic are:

Explosives	Lithium aluminum hydride
Magnesium powder	Potassium metal
Sodium borohydride	Sodium hydrosulfite
Sulfur phosphide	Trichlorosilane

4.6.22 Satellite Accumulation Area

An area, designated in writing by the Environmental Office, that meets specific criteria allowing for the accumulation of up to 55-gallons of hazardous wastes or 1 quart of extremely hazardous or acutely hazardous wastes for up to 270 days (9 months).

4.6.23 Secondary Containment

An impermeable, chemically compatible contained area or container (e.g., bermed pad, tray, or overpack drum) used to contain spills and leaks from primary containers. The secondary containment must be equal to, or greater in volume than 110% of a single container; or 10% of the aggregate volume of multiple containers stored therein or 150% of the largest container. It must be able to contain a 20-minute fire sprinkler release, and/or accommodate a 24-hour rainfall as determined by a 100-year storm, if the containment is subject to rainfall.

4.6.24 Segregation

The separation of chemically incompatible materials by physical barriers or distance.

4.6.25 Solid Material

Material other than gases which does not contain any free liquid at standard temperature or pressure.

4.6.26 Solid Waste

Any solid, liquid, semisolid, or contained gaseous discarded material. A discarded material is any material which:

1. Is relinquished by being disposed of, burned, incinerated, accumulated, stored, or treated, but not recycled before being relinquished by being disposed of, burned, or incinerated.
2. Is recycled or accumulated, stored, or treated before recycling (except as provided in Section 25143.2 of the California Health and Safety Code).

4.6.27 Toxicity

The characteristic of a waste that renders the waste hazardous by any of the following criteria:

1. Contains any of the 39 toxic materials at or above the concentrations listed in 40 CFR 261.24 (see Appendix G, Table 1, TCLP compounds).
2. Has an acute oral LD50 (rat) of <5000 mg/, dermal ld50 (rabbit) of <4300 mg/kg, inhalation lc50 (rat) of Ü10,000 ppm (as a gas or vapor), or aquatic 96-hour lc50 of <500 mg/liter (using fathead minnows, golden shiners, rainbow trout).
3. Contains any of the inorganic and organic persistent and bioaccumulative substances at or above the concentrations listed in 22 CCR 66261.24(a)(2)(a) and (b) (see Appendix G Tables II and III).
4. Contains any of the substances listed in 22 CCR 66261.24.(a)(7) at a single or combined concentration Ý0.001% by weight (see Appendix G, Table IV).
5. Poses a hazard to human health or the environment because of its carcinogenicity, acute or chronic toxicity, bioaccumulative properties or persistence in the environment.
6. Examples of wastes which exhibit the toxicity characteristic are:

asbestos	barium oxide
catalyst with isocyanate	chloroform

lead acetate	mercury compounds
methylene chloride	oil/water mixtures
phenol	polychlorinated biphenyls (pcb)
silver solution,[3] 5 mg/l silver	sodium cyanide
vinyl chloride, 0.01% by weight	

4.6.28 Unused Material

Virgin material in original containers.

4.6.29 Used Material

Any spent material.

4.6.30 90-day Accumulation Area

An area that may accumulate any volume of hazardous waste of any type. Waste must be shipped off-site to a permitted facility within 90 days.

4.7. General Management Requirements

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4.8. Waste Accumulation Area Requirements

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4.9. Metrics

a. Percent compliance with federal, state, and local hazardous waste regulations.
Goal: 100% compliance.

b. Percent of inspection findings corrected within 30 days.
Goal: 100% of inspection findings corrected within 30 days.

c. Percent of regulatory and Agency documents submitted on or before due dates.
Goal: 100% of regulatory documents (Biennial Report, BOE statement/fee, NETS submittals, etc.) completed on or before due dates.

4.10. Sources of Additional Information or Assistance

a. Environmental Office (Code QE, **REDACTED**, http://www.q.arc.NASA.gov/qe)).

b. Hazardous Waste Management Reference Guide and CD ROM Training.

c. Hazardous Waste/Environmental Essentials Training Class.

4.11. Cancellations

Chapter 18, Waste Disposal, of the Ames Safety Manual, AHB 1700.1, is canceled.

4.12. Appendices

4.12.1 Appendix A: Form A - Chemical Material/Waste Pick-up and Container Delivery Request

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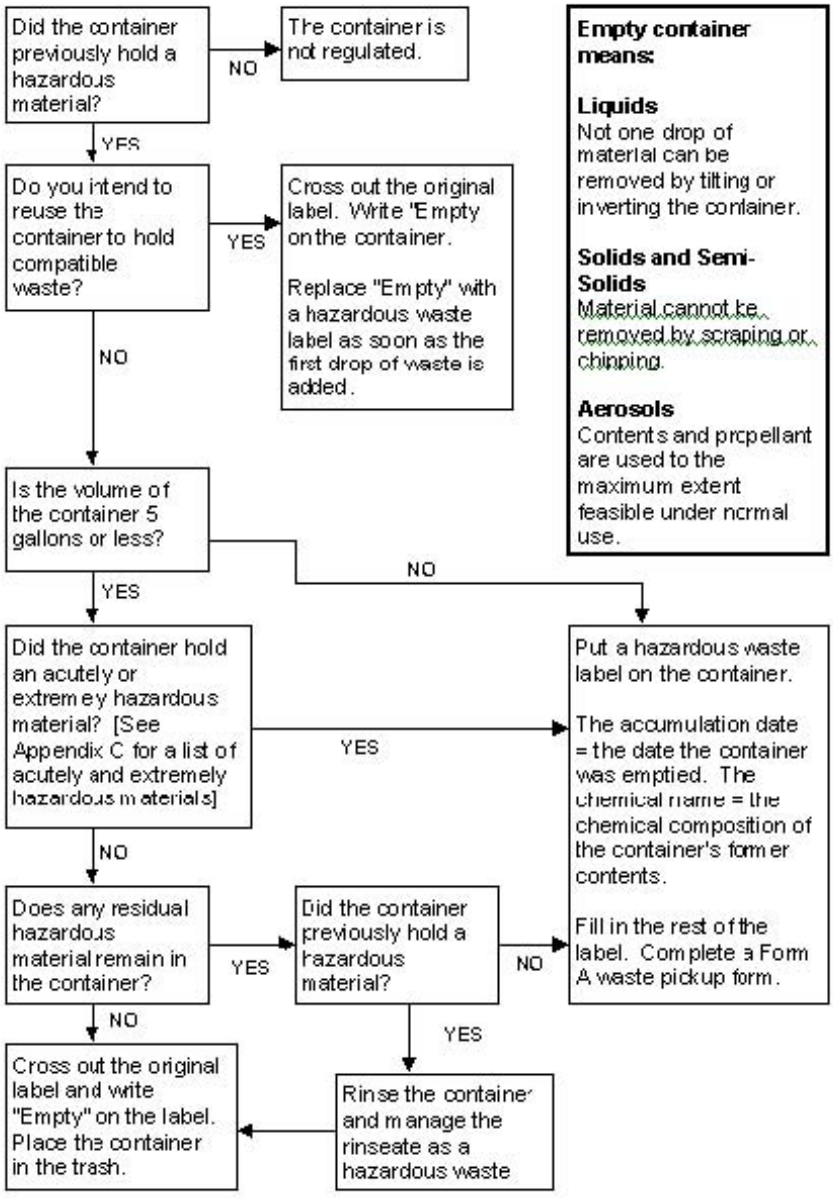
4.12.2 Appendix B: Empty Container Decision Tree



4.12.3 Appendix C: Acutely Hazardous and Extremely Hazardous Wastes

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4.12.4 Appendix D: Empty Container Label

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4.12.5 Appendix E: Hazardous Waste Accumulation Label

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4.12.6 Appendix F: Weekly Hazardous Waste Storage Area Inspection Checklist

WEEKLY HAZARDOUS WASTE STORAGE AREA INSPECTION CHECKLIST

Area Inspected: _____

Inspection Date: _____ Time: _____

Name of the Inspector(s): _____

(Inspection items are based on hazardous waste (HW) inspection requirements of 22 CCR 66265.174 and will be conducted by qualified personnel only).

INSPECTION ITEMS	Y	N	Comments/Corrective Action
1. Are all employees trained and training documented?			
2. Containers handled safely to avoid raptures and leaks?			
3. Any leaking containers?			
4. Containers kept closed except when adding or removing HW?			
5. Containers have proper labels?			
6. HW accumulated for <90 days?			
7. HW identified, characterized and classified, and stored properly?			
8. HW compatible with containers?			
9. Incompatible HW segregated?			
10. HW storage area kept clean and secure?			
11. Form A's complete by 50th day?			
12. Eyewash and emergency showers tested regularly and maintained?			
13. Contingency Plan and ER Procedures in place?			
14. Proper warning signs posted?			
15. Proper aisle space provided and maintained?			
16. PPE and spill kits available?			
17. Emergency response numbers well posted?			
18. Secondary containment provided for all liquid wastes?			
19. Secondary containment compatible with liquid stored?			
20. Secondary containment has adequate capacity 110%) to contain waste stored?			
21. Secondary container free of liquid and debris?			
22. HW storage area has limited access and the entrances are locked when unattended?			
23. HW container labels are legible and undamaged?			
24. Required HW management records complete and current?			
25. Non saturated absorbents reused for spill clean up?			
26. Ignitable and reactive HW are located 50 ft. from property line			
27. No HW is accumulated at SAA beyond quantity and time limits?			
28. HW evaluated for compliance with state and federal LDR requirements?			

4.12.7 Appendix G: Characteristic and Listed Wastes

Federal listed wastes:

a. Hazardous Waste From Non-Specific Sources. (A full list is included in 40 CFR 261.31 and 22 CCR 66261.31) "F-Coded" Wastes: F001 to F012 and F019 to F039.

b. Hazardous Waste from Specific Sources (A full list included in 40 CFR 261.32 and 22 CCR 66261.32). "K-Coded" Wastes.

c. Hazardous Waste from Discarded Commercial Chemical Products, Off-Specification Species, Container Residues, and Spill Residues thereof. (A full list is included 40 CFR 261.33 and 22 CCR 66261.33 for "P" and "U" coded wastes).

Federal toxicity characteristic list (40 CFR 261.24):

Table I - Maximum Concentration of Contaminants for the Toxicity Characteristic (RCRA TCLP Waste)			
EPA Haz. Waste No.	Contaminant	Chemical Abstracts Service No.	Regulatory Level (mg/l)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0
D023	o-Cresol	95-48-7	200.01
D024	m-Cresol	108-39-4	200.01
D025	p-Cresol	106-44-5	200.01
D026	Cresol		200.01
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	0.13
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	0.13
D033	Hexachloro-1,3-butadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0

D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
EPA Haz. Waste No.	Contaminant	Chemical Abstracts Service No.	Regulatory Level (mg/l)
D038	Pyridine	100-86-1	5.02
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8000-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5 Trichlorophenol	95-95-4	400.0
D042	2,4,6 Trichlorophenol	88-06-2	2.0
D017	2,4,5 TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

1. If o-, m- and p-Cresol concentrations cannot be differentiated, the total (D026) concentration is used. The regulatory level for total cresol is 200 mg/L.

2. Quantitation limit is greater than the calculated regulatory level. The quantitation level therefore becomes the regulatory level.

California toxicity characteristic lists (22 CCR 66261.24 and 22 CCR 66261.113)

Table II-List of Inorganic Persistent and Bioaccumulative Toxic Substances and Their Soluble Threshold Limit Concentration (STLC) and Total Threshold Limit Concentration (TTLC) Values		
Substance a, b	STLC mg/l	TTLC Wet-Weight mg/kg
Antimony and/or antimony compounds	15	500
Arsenic and /or arsenic compounds	5.0	500
Asbestos		1.0 (as percent)
Barium and/or barium compounds (excluding barite)	100	10,000c
Beryllium and/or beryllium compounds	0.75	75
Cadmium and/or cadmium compounds	1.0	100
Chromium (VI) compounds	5	500
Chromium and/or chromium (III) compounds	5d	2,500

Cobalt and/or cobalt compounds	80	8,000
Copper and/or copper compounds	25	2,500
Fluoride salts	180	18,000
Lead and/or lead compounds	5.0	1,000
Mercury and/or mercury compounds	0.2	20
Molybdenum and/or molybdenum compounds	350	3,500e
Nickel and/or nickel compounds	20	2,000
Selenium and/or selenium compounds	1.0	100
Silver and/or silver compounds	5	500
Thallium and/or thallium compounds	7.0	700
Substance a, b	STLC mg/l	TTLC Wet-Weight mg/kg
Vanadium and/or vanadium compounds	24	2,400
Zinc and/or zinc compounds	250	5,000

a. STLC and TTLC values are calculated on the concentration of the elements, not the compounds.

b. In the case of asbestos and elemental metals, the specified concentration limits apply only if the substances are in a friable, powdered or finely divided state. Asbestos includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

c. Excluding barium sulfate

d. If the soluble chromium, as determined by the TCLP set forth in **Appendix I** of chapter 18 of this division, is less than 5 mg/l, and the soluble chromium, as determined by the procedures set forth in **Appendix II** of chapter 11, equals or exceeds 560 mg/l and the waste is not otherwise identified as a RCRA hazardous waste pursuant to Title 22 CCR Part 66261.100, then the waste is a non-RCRA hazardous waste.

e. Excluding molybdenum disulfide.

Table III-List of Organic Persistent and Bioaccumulative Toxic Substances and Their Soluble Threshold Limit Concentrations (STLC) and Total Threshold Limit Concentration (TTLC) Values		
Substance	STLC Mg/l	TTLC Wet-Weight mg/kg
Aldrin	0.14	1.4
Chlordane	0.25	2.5
DDT, DDE, DDD	0.1	1.0
2,4-Dichlorophenoxyacetic acid	10	100
Dieldrin	0.8	8.0
Dioxin (2,3,7,8-TCDD)	0.001	0.01

Endrin	0.02	0.2
Heptachlor	0.47	4.7
Kepone	2.1	21
Lead compounds, organic	---	13
Lindane	0.4	4.0
Methoxychlor	10	100
Mirex	2.1	21
Pentachlorophenol	1.7	17
Substance	STLC Mg/l	TTLC Wet-Weight mg/kg
Polychlorinated biphenyls (PCBs)	5.0	50
Toxaphene	0.5	5
Trichloroethylene	204	2,040
2,4.5-Trichlorophenoxypropionic acid	1.0	10

Table IV - Per listed in 22 CCR 66261.24.(a)(7), a waste is hazardous if it contains any of the substances at a single or combined concentration Ý 0.001% by weight	
2-Acetylaminofluorene (2-AAF)	bis (Chloromethyl) ether (BCME)
Acrylonitrile	1,2-Dibromo-3-chloropropane (DBCP)
4-Aminodiphenyl	3,3'-Dichlorobenzidine and its salts (DCB)
Benzidine and its salts	4-Dimethylaminoazobenzene (DAB)
Ethyleneimine (EI)	4-Nitrobiphenyl (4-NBP)
Methyl chloromethyl ether	N-Nitrosodimethylamine (DMN)
alpha-Naphthylamine (1-NA)	beta-Propiolactone (BPL)
beta- Naphthylamine (2-NA)	Vinyl chloride (VCM)

Table V - List of Total Threshold Limit Concentration Values of Persistent and Bioaccumulative Toxic Substances in Extremely Hazardous Wastes [22 CCR 66261.113]	
Substance	TTLC Wet-Weight mg/kg
Aldrin	140
Arsenic and/or arsenic compounds	50,000 (as As)
Beryllium and/or beryllium compounds*	7,500 (as Be)
Cadmium and/or cadmium compounds*	10,000 (as Cd)
Chlordane	250
2,4-Dichlorophenoxyacetic acid	10,000
Dieldrin	800
Dioxin (2,3,7,8-TCDD)	1
Endrin	20

Heptachlor	470
Kepone	2,100
Lead compounds, organic	1,300 (dry weight basis; as Pb)
Lindane	400
Mercury and/or mercury compounds	2,000 (as Hg)
Methoxychlor	100
Mirex	2,100
Polychlorinated biphenyls (PCBs)	5,000
Selenium and/or selenium compounds*	10,000 (as Se)
Thallium and/or thallium compounds*	70,000 (as Tl)
Toxaphene	500
Trichloroethylene	2,040
2,4.5-Trichlorophenoxypropionic acid	1,000

*in the case of elemental metals, the specific concentration limits apply only if the metals are in a friable, powdered or finely divided state.

4.12.8 Appendix H: Non Hazardous Waste List

Adenosine 2',3' cyclic phosphate	Glutamic acid, D- or L-
Adenosine 2',3' cyclic monophosphate	Glutamic acid monosodium salt monohydrate
Adenosine 5' triphosphate	Glyceric acid, D- or L-
Agar	Glycine
Alanine, D- or L-	Glycocol
Albumin, bovine, egg, etc.	Glycoleucine
Alumina	Glycylglycine
Aluminum oxide	Gum Arabic
Algae broth	Hemoglobin
Aminoacetic acid	Heparin Sodium
Aminoethanoic acid	HEPES
Aminohexanoic acid	Hydroxybutanedioic acid
Arginine, D- or L-	4-Hydroxy-3-methoxybenzoic acid
Ascorbic acid	Hydroxysuccinic acid
Asparagine, D- or L-	Invert sugar
Aspartic acid, D- or L-	Isoleucine, D- or L-
Bacitracin ointment	Lactalbumin hydrolysate
Bacto - Agar	Lactose
Bacto - Peptone	Leucine, D- or L-
Bacto - Tryptone	Leucine monohydrochloride, L-

Beef heart for infusion	D-Levulose
Biotin, D-	Lexan pellets
Bovine plasma albumin	Lipase (Hog Pancreas)
Brain heart infusion	Liver extract concentrate
Calcium carbonate	Lysine, D- or L-
Carbowax 20M	M-1 embedding matrix
Carotene, beta-	MacConkey Agar
Cellobiose	Malic acid, DL-
Cellulose acetate	Magnesium carbonate
Chlorella Agar	Maltose
Collagen	Mannitol, D-
Corn sugar	Mannitol Salt Agar
Cyanocobalamin	Mannose, D- or L-
Cysteine, D- or L-	Menadione
Cystine, D- or L-	Methionine, D- or L-
Cytochrome C	Molecular sieves
Dextrose	Monosodium glutamate
Diatomaceous earth	Niacin
Diatomite	Nicotinic acid
Fructose, D-	Nitron
Galactose, D- or L-	Norleucine, D- , L- or DL-
GC Packing (various mesh sizes)	Nutrient Agar
Gelatin	Ornithine, D- or L-
Glass, H Granular	Ossein
Glucose, D- or L-	Peptone Iron Agar
Phenylalanine, D- or L-	Starch
pHydrion Buffer Salts (pH 3 - 9)	Sucrose
Polymyxin-Bacitracin-Neomycin ointment	THAM
Porous Glass Absorbent	Thermoacidurans Agar
Potassium bicarbonate	Threonine, , D- or L-
Potassium chloride	Tris(hydroxymethylaminomethane)
Potato Flour	TRIS
Proline, D- or L-	Trizma
Purified Agar	Tryptic soy broth
Pyridoxine monohydrochloride	Trypticase soy broth
Riboflavin	Tryptophan, D- or L-
Sephadex G-200	Tryptose Agar

Serine, D- or L-	Tyrosine, D- or L-
Silica	Valine, D- or L-
Silica gel	Vanillic acid
Silicic acid Bio - Sil A	Vitamin B4
Silicon dioxide	Vitamin B6
Sodium bicarbonate	Vitamin B-12
Sodium chloride	Vitamin K3
Sodium glutamate monohydrate	Xylose, D- or L-
Sorbitol	Yeast Extract Powder

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